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Awareness in reducing single-use plastic: A case study of students in UKM

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Abstract

This paper seeks a review on awareness and practicing habits of businesses and students in UKM in the effort to reduce single-use plastic usage. Primary data were obtained through a questionnaire survey of randomly sampled 100 students, business owners and staff in UKM. Results of the survey showed a good awareness level amongst the respondents with regard to single use of plastic in UKM campus. The conclusion of this survey is that the general demographic in UKM is willing to opt for more environmentally friendly products to replace heavy use of plastics and accepting of reducing single use plastic policies

Keywords: Plastic; Pollution; Environment; Awareness; UKM.

**Conciencia en la reducción de plástico de un
solo uso: Un estudio de caso de estudiantes en
UKM**

Resumen

Este documento busca una revisión sobre la conciencia y los hábitos de práctica de las empresas y estudiantes en UKM en un esfuerzo por reducir el uso de plástico de un solo uso. Los datos primarios se obtuvieron a través de una encuesta por cuestionario de 100 estudiantes, propietarios de empresas y personal en una muestra aleatoria en UKM. Los resultados de la encuesta mostraron un buen nivel de conciencia entre los encuestados con respecto al uso único de plástico en el campus de UKM. La conclusión de esta encuesta es que el grupo demográfico general en UKM está dispuesto a optar por productos más ecológicos para reemplazar el uso intensivo de plásticos y aceptar la reducción de las políticas de plástico de un solo uso.

Palabras clave: Plástico; Contaminación; Medio ambiente; Conciencia; UKM

1. INTRODUCTION

We use single-use plastic almost every day. The amount of usage of single –use plastics is high. Plastic Free Challenge website (PFC, 2020) stated that Single-use plastics, or disposable plastics, are used only once before they are thrown away or recycled. These items include plastic bags, straws, coffee stirrers, soda and water bottles and most food packaging (PFC, 2020). A single-use plastic is disposable plastic that is designed to be used once, then either tossed or recycled (STEPHANIE V, 2020). In 2019, it was reported that Malaysia is rated as one of the world’s worst for plastic pollution. Most of the plastics are dumped, a small portion burnt and a very tiny fraction (2% in 2013) recycled (MANGAI B, 2019). Malaysia has also emerged as a new major hub for plastic waste imports after China’s decision to ban

imports of plastic scrap in early 2018 (UN COMTRADE DATABASE, 2019). The plastic waste was supposed to be processed for recycling, but the companies involved, many illegal, simply dumped or burnt it (MANGAI B, 2019).

Malaysia has several policies and laws in effort to control pollution caused by plastic waste that include Environmental Quality Act 1974 and the 2002 National Policy on the Environment. Environmental Quality Act (EQA) 1974 lays down prohibition of discharge of wastes into Malaysian waters, prohibition or control for licensed persons from discharging of wastes in certain circumstances enforced by the Department of Environment. Another agency that is empowered to manage solid waste including plastic waste in Malaysia that implements the goals in the National Solid Waste Management Policy 2016 is known as the National Solid Waste Management Department. The goals stated in the 2016 Policy are to establish a comprehensive, integrated, cost effective, sustainable and accepted solid waste management system that is related to environmental preservation, affordable technology selection and public health; and implement PSPs based on waste management (NATIONAL SOLID WASTE MANAGEMENT DEPARTMENT, 2020).

The higher learning institutions in Malaysia have also initiated countless effective measures to save the environment by raising awareness on opting for eco-friendly alternatives as one of the initiatives to implement the concept of sustainability at universities that includes less usage of plastic materials. For example, Universiti Malaya (UM), Universiti Sains Malaysia (USM), Universiti

Kebangsaan Malaysia (UKM), and Universiti Putra Malaysia (UPM) have begun campus sustainability initiatives (Er & Karudan, 2018) that implement several projects to achieve sustainable waste management goals. For instance, the Zero Waste Campaign (UMZWC) by UMCARES nurturing and encouraging waste separation practices in UM Campus categorized as paper, plastic bottles and other plastics and metals. Pusat Kitar Semula Universiti Kebangsaan Malaysia (PKS-UKM) in collaboration with Alam Flora Sdn Bhd, have deployed mobile recycling trucks (TIEW et al., 2019) in light of recycling initiatives for sustainable environment.

The National University of Malaysia (UKM), which is the research area in this article, has created rules in the form of Circulars (*Pekeliling*) in the university campus. One particular circular prohibits the use of straws in food premises in the campus Prohibition on the Use of Straws on Food Premises in the UKM (ARAHAN LARANGAN PENGGUNAAN PENYEDUT MINUMAN DI PREMIS MAKANAN DI UKM) 2019 authorised by Center for Risk Management, Sustainability, And Occupational Health UKM. This circular states that all parties appointing food suppliers in UKM must ensure that the prohibition of the use of straws in all food premises in the university campus is complied with. Furthermore, the rule that was enforced on 1 April 2019 must be conveyed to all food premise operators, officers and staff in UKM. This is one of UKM's efforts in tackling issues in relation to reducing plastic usage and waste in the campus.

2. METHODOLOGY

This research was conducted to determine the level of awareness of a university community regarding the utilisation of single-use plastic in daily life based on several groups on campus. These groups consisting of students, staff and business owners operating within the UKM campus were randomly chosen for this research. According to TAHERDOOST (2016) the entire set of cases from which the researcher sample is drawn is called the population. Since, researchers neither have time nor the resources to analysis the entire population so they apply sampling technique to reduce the number of cases and generalise the findings based on these cases. The sampling done for this research is random, and was set to 100 people in total with no set limit on the number of respondents for each category.

2.1 Data Collection

The data collection for this research was obtained through primary and secondary sources where the former source is by conducting a survey on the demographic with a limit of 100 respondents in total. A survey which stated by CHECK & SCHUTT (2012) would be a collection of information from a sample of individuals through responses to a set of questions. This is due to the nature of the study leaning towards a socio legal approach which would be much more effective in collecting data. SINGLETON &

STRAIGHTS (2009) reiterated that surveys are often used in social and psychological research due to it being a much more suitable medium and therefore more efficient in collecting data. Secondary source is through findings referred to in journals, books, thesis, conference papers etcetera which will be listed in references.

2.2 Data Analysis

Data analysis is important for deductions and correlations based on the statistics given. From there the data can be made into conclusions as well as solutions on how to answer the questions posed in this research. This research however, focuses on the rough data acquired in the survey, which was in summarized into a table specifying the responses in their respective categories. These numbers were calculated into percentages based on the total number of each category to determine the answer to the two questions posed in this study. The average percentage will also be calculated, to measure the general awareness and willingness of the respondents regarding the set of questions. The data will then be used to find a correlation between the two items, Part B and Part C in Tables 2 and 3 respectively that will contribute to the conclusion of the survey research relevant to this study.

2.3 Instruments

The study used a survey using google forms online platform to retrieve responses from three categories namely students, business operators and staff in UKM as respondents. The survey was divided into three parts namely Part A, Part B and Part C. Part A was to determine the background of the respondents. The instruments used to determine the demographic of the three categories in UKM can be seen in Table 1 below.

Components	Category
Occupation	Student Staff Business Operator
Age	18-25 26-35 36-45 46 and above
Gender	Male Female

Table 1. Part A

In part B, the survey intends to highlight the awareness of the three categories by posing to them five (5) questions and/or statements. The average score was also calculated to determine the general

awareness among the three demographic categories. The data for B1-B5 consists of only three answer options which are “Yes”, “No” and “Maybe”. However, this study based the assessments on how many had agreed in favour of the question and to avoid vagueness, those that opted for “Maybe” was not accounted for. The questions and/or statements for this observation can be seen in Table 2.

Questions/Statements
(B1) Do you know that single use plastic is a form of pollution?
(B2) Are you aware that the issue of single use plastic waste in Malaysia is affecting human health and the environment?
(B3) Are you aware there is heavy usage of single use plastic in UKM?
(B4) Are you aware of single use plastic in your daily routine?
(B5) It is important that businesses use environmentally friendly practices and products.

Table 2. Part B

As for part C of the survey, the study had utilised a mix answers of three answer options and a 1-5 scale answer options. The three answer options of ‘Yes’, ‘Maybe’ or ‘No’ were reserved for questions in item C1, C4, C5, C7, and C8. Meanwhile, 1-5 scale answer options

for C2, C3 and C6 only whereby the options varies depending on question. C2 and C3 consists of 5 answer options which are “*Strongly Disagree*”, “*Disagree*”, “*Neutral*”, “*Agree*” and “*Strongly Agree*” while C6 includes 5 answer options of “*Very Often*”, “*Often*”, “*Sometimes*”, “*Rarely*” and “*Never*”. Part C focused specifically on the willingness of the three demographic categories as well their practicality in policy implementation that require less single use plastic in UKM. The questions differentiated in the table with the marking “*” were evaluated based on positive responses as it consists of various 1-5 scale answer options. To avoid uncertainties in data for these items in C2, C3 and C6, answers that are clearly in the middle which are neither in support or against namely “*Neutral*” and “*Sometimes*” were not counted as positive answers. As for the ‘*Yes*’, ‘*Maybe*’ or ‘*No*’ questions, the percentages were evaluated based on the positive response towards those questions. Responses that are ambiguous were not taken into the calculation. The questions and/or statements posed to the respondents for this observation can be seen in Table 3.

ITEM
(C1) If a business that you shop at does not provide single use plastic, will you stop buying from them?
(C2) I agree that UKM should ban single use plastics and encourage usage of environmentally friendly materials *

(C3) I should not pay any fee for single use plastics in UKM *
(C4) I will bring my own environmental bags
(C5) I am willing to pay for biodegradable plastic bags or other alternatives
(C6) How often do you use single use plastic bags? *
(C7) As a business do you provide single use plastics?
(C8) Would you choose a more environmentally friendly alternative to single use plastic in UKM?

Table 3. Part C

3. RESULTS and DISCUSSION

3.1 Demographics

This research sample focuses on the main demographic in UKM consisting of students, business operators. This total sample as seen in Table 4 is 100 individuals with majority as business operators at 39% followed by students 33% and staff at 28%. This demographic reflects the users that would be impacted by any directives or approaches to single use plastic in UKM. This research collected data in accordance to age, gender and occupation. It is found that the age majority that ranges from 18-25 years old is 37% and most respondents are in their

early 20s. In terms of gender, the ratio is almost equal, however the female demographic weighs in slightly more at 51%.

Components	Category	Number	Percentage (%)
Occupation	Student	33	33
	Staff	39	39
	Business Operator	28	28
Age	18-25	37	37
	26-35	23	23
	36-45	22	22
	46 and above	18	18
Gender	Male	49	49
	Female	51	51

Table 4. Demographics

Table 5 reflects on the awareness of the UKM community regarding the utilisation of single use plastics in the university based on each category.

ITEM	STUDENTS (%)	BUSINESS OPERATORS (%)	STAFF (%)	AVERAGE PERCENTAGE
(B1)	97	97	93	96
(B2)	97	87	89	91
(B3)	57	79	25	54
(B4)	100	100	100	100
(B5)	93	90	96	93

Table 5. Awareness of respondents

Table 5 shows the responses to items in Table 2 to assess the state of awareness of single use plastics. Using the statistics obtained from the survey, they were specified into percentages based on their respective total numbers. This is due to the fact that the number of people in these categories are irregular, and so by basing the percentage on their original numbers in accordance to their answers that agree with the questions, the data will be fair and more accurate. The response to B1, all three categories seem to agree, with a high average percentage amongst the three categories, thus, it can be assumed that they are well aware regarding pollution caused by single use plastics. However, as a response to the impact of single use plastic

waste on human health and the environment (B2), there is an acute awareness amongst the three categories in particular students. The percentages in all three categories responding to B3 are particularly lower especially amongst UKM staff at 25% while business operators had the highest awareness of heavy usage of single use plastics at 79%. In B4, all of the participants answered 'Yes' to being aware of the single use plastic in their daily routine at 100%. B5 also had scored high percentages by all three categories where the highest response came from business operators at 90%. However, the three categories had satisfactory percentages, and so we can assume that they have high awareness regarding good environmental practices. In summary, there is a lack of awareness in heavy usage of plastic (B3) where the average percentage is only 54%. However, the respondents scored a high average percentage for B1, B2, B4 and B5.

The survey seeks to address responses to the second question which is whether UKM community is ready and able to sustain a more environmentally friendly alternative to single use plastic in the third part of the survey. In essence, this part intends to discover the extent of willingness from UKM community to opt for less usage of single use plastic. The data analysis is found in Table 6 responding to questions or statements laid down in Table 3.

ITEM	STUDENTS (%)	BUSINESS OPERATORS (%)	STAFF (%)	AVERAGE PERCENTAGE
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(C1)	58	46	50	51
(C2) *	70	56	54	60
(C3) *	70	62	25	52
(C4)	82	87	93	87
(C5)	76	14	20	37
(C6) *	100	92	96	96
(C7)	-	95	-	95
(C8)	94	97	100	97

Table 6. Willingness of respondents opting for less single use plastic

Table 6 shows responses to statements or questions in Table 3 to determine whether the three demographic categories are willing to opt for sustainable alternatives to move toward a practical policy that require less single use plastic in UKM. The findings in Table 6 that corresponds to Items in Table 3 reflects the percentage of willingness towards a more environmentally friendly alternative to single use plastics. For C1, the responses were recorded on whether they would still support a business that does not provide single use plastics. The three categories responded with an average of 51% with students who are more willing at 58%. For C2 and C3, since they are 1-5 scale

questions, only the responses that read “*Agree*” and “*Strongly Agree*” were counted to be in support of this item. Students showed a strong support at 70% with an overall average in support of this policy at 60% for C2. This trend remained with students for C3 agreeing that they should not pay any fee for using single use plastics. However, the percentage among the staff was low, garnering only 25% support for C3. We can assume that the staff was more willing to pay fees for single use plastics compared to the other categories. Data collected for C5 that is the willingness to pay for biodegradable bags or other types of bags with an overall average of only 37%. The lowest percentage was among business operators at only 14% to pay extra for environmentally friendly alternatives. However, students showed willingness to spend more for this sustainable approach at 76%. C6 questioned how often one utilises single use plastics which reflects the frequency of such practice amongst the respondents in UKM where all three categories responded with ‘*Often*’ or ‘*Very often*’. C7 was specifically addressed for business operators on their use of single use plastic in their daily business activities where 97% responded positively. However, based on responses on C8, it can be assumed that all three categories would opt for a more environmentally friendly alternatives if they are made available.

The overall observation on the correlation between responses in Table 5 and Table 6 can be summarised as follows:

1. The business operators were the most aware on heavy usage of single use plastic in UKM as concluded in B3 in Table 5 which positively corresponds with responses for C7 in Table

- 6, which states that almost all businesses provide single use plastic in business and their usage of plastic can be substantial.
2. UKM staff refuse to pay for single use plastic in C3 and in turn results them to be more willing than others to bring reusable material as reflected in B5 and to opt for more environmentally friendly products as reflected in C8.
 3. The general demographic of UKM are accepting of environmentally sustainable policies to reduce the usage of single use plastic.

Based on the survey, the problem with Single-Use Plastics usage in UKM has shown that the main challenge to resolve or reduce the usage of plastics is caused by the lack of awareness on its impacts to the environment. There seems to be less awareness amongst the students, staffs and also business operators on the heavy usage of Single-Use Plastics in UKM. This means that they do not realize that there is a heavy usage of plastics in UKM despite concerted efforts (as one of the established green university) that had been done within campus to help save the environment through a proper waste management system. This can be due to lack of promotion or sufficient information and consistent dissemination thereof on reducing plastic usage and the harmful effects of plastic waste on the environment, or the lack of monitoring or enforcement of UKM circular on usage of straws in campus. In a research, it was commented that *“reducing the consumption of wasteful products is beneficial, but sometimes hard to achieve due to food safety and lack of convenience”* (BEITZEN-

HEINEKE, E.; BALTA-OZKAN, N.; REEFKE, H., 2017, p. 1528-1541).

Nonetheless, opting to choose an eco-friendlier alternative to plastic in UKM seemed highly probable. The initiatives to promote awareness on other alternatives to single-use plastic bags however must be carried out continuously and not limited to business operators but also to all staff and students. The UKM circular in 2019 prohibiting business operators to provide plastic straws is a positive move. However, based on the observation in various cafes in UKM, there is still no strict policies or enforcement on reducing single use plastics which includes other forms of plastics such as cups and plates.

Perhaps, business operators in UKM can instantly reduce wastage and costs by using plastic by implementing Bring-Your-Own culture at its premises. This will inevitably influence customers for example, to bring their own bags and consequently make an impact on the usage of plastics or reducing Single-Use Plastics usage in UKM.

4. CONCLUSION

From this study, it can be concluded that reducing usage of plastics from creating further harm to the environment in UKM is a shared responsibility between the governing body and staff, the business operators and students. Serious environmental problems connected to use of single use plastic should be looked at by UKM in a holistic manner in line with the government's initiative to reduce single use plastic in Malaysia. Several actions should be taken by

UKM which includes banning plastics, charging extra fee for Single-Use plastics and educating on use of other sustainable alternatives through consistent and proper mechanisms. Such mechanisms can only be effective if UKM community takes a concerted effort to prevent or reduce the use of single plastics in all establishments within university campus.

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